

Oyster reefs to hold back mud and sand flat erosion



IMARES
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Can oyster reefs hold back the progressive mud and sand flat erosion in the Oosterschelde (Eastern Scheldt)? A trial that involved the use of banks of crustaceans to curb wave action and catch silt is being conducted in the Oosterschelde as part of the Building with Nature innovation programme.

Artificial oyster reefs have been introduced at two locations in the Oosterschelde to assist in the struggle against the disappearance of mudflats and sand flats into tidal inlets. Oyster larvae and other organisms will attach themselves to the shells and create a living reef, which will slow down erosion and preserve biodiversity. At the same time, the flats will continue to protect the dykes behind according to IMARES researcher Tom Ysebaert

Innovation

Since the Delta Works were commissioned, the mud and sand flats behind the Oosterschelde flood barrier have not protruded above water as much as they used to at low tide. The area above the low-water line is sinking because around a million cubic metres of sand and silt are washed away every year into tidal inlets. The wave action that returns the silt and rebuilds the banks has been seriously compromised. As a result, 50 to 100 hectares of mud and sand flats disappear under water every year. Innovative measures are needed to stop the sand depletion and to retain the natural tide patterns – and their functions – in the Oosterschelde.

Oyster reef

Gabion mattresses are mounted on the silt, filled with fished-up oyster shells, and closed with a lid. This results in a continuous artificial oyster reef, 200 metres long and ten metres wide.



Sustainable solution sought

The flats that are left dry at low tide serve as resting places for seals and foraging sites for countless species of waders. Without intervention this wildlife will eventually disappear from the Oosterschelde. The mud and sand flats also help to shield the dykes from waves during storms. If they disappear the dykes will take a heavier pounding. The erosion can be solved by returning the lost sand to the flats, but a more sustainable solution can be found in combination with the placement of oyster reefs.

The trial with the oyster reefs will run until 2012 at the very least. If it is successful the technique will be upscaled and implemented. The reefs on the low-water line are being monitored to determine morphological and ecological changes. The trial will be a success if the artificial reefs develop into living, species-rich reefs and the erosion to the mud and sand flats slows down.

The trial is being conducted as part of the Building with Nature innovation programme by IMARES, part of Wageningen UR, the NIOO-KNAW ecological research institute, Deltares and Van Oord, all partners in EcoShape (www.ecoshape.nl).

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